THE OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301-8000

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PRODUCTION AND
LOGISTICS

(L/EP)

DEFENSE ENERGY PROGRAM POLICY MEMORANDUM (DEPPM) 88-1

MEMORANDUM FOR DESIGNATED ENERGY OFFICIALS OF THE OFFICE OF THE SECRETARY OF DEFENSE, ORGANIZATION OF THE JOINT CHIEFS OF STAFF, MILITARY SERVICES, AND DEFENSE AGENCIES

SUBJECT: Defense Facilities Energy Selection

This memorandum provides updated policy guidance for the selection of energy for Defense facilities and implements Senate Armed Services Committee Report 99-331 and Title 10 U.S.C., Section 2690. DEPPMs 85-3 and 85-4 are hereby canceled.

Recent legislation has greatly increased flexibility in the selection of energy for Defense facilities. Public Law 100-42, signed on May 21, 1987, greatly reduced the constraints of the Powerplant and Industrial Fuel Use Act, which specified the use of coal and/or solid fuel in large powerplants and major fuel burning installations.

Public Law 99-661, directed that the primary energy source for any new or rehabilitated energy system constructed on lands under the jurisdiction of the Military Departments shall be the most life-cycle cost-effective alternative. The Act also directed the Secretary of Defense to prescribe regulations for the Services to implement that direction. The enclosed guidance provides technical and management policy to be used in the evaluation of all new or rehabilitated energy source alternatives for Defense facilities worldwide. Addressees are requested to furnish this office with copies of implementing direction within 120 days.

John A. Mittino
Deputy Assistant Secretary
(Logistics)

Enclosure

ENERGY SOURCE SELECTION AND APPLICATION CRITERIA FOR DEFENSE FACILITIES

I. GENERAL POLICY: The primary energy source selected for all new Defense facility uses (including major rehabilitation efforts which provide an opportunity to evaluate energy alternatives) shall be the lowest life-cycle cost (LCC) alternative which meets the basic quantity, quality, and reliability requirements of the mission supported within specific limits and guidelines imposed by law. Acquisition of a specific energy supply shall be through the open, competitive procurement process wherever possible.

A. CONVENTIONAL ENERGY SOURCES: Public Law (P.L.) 100-42, signed on May 21, 1987, repealed the section of the Powerplant and Industrial Fuel Use Act which specified the use of coal or solid fuel in plants over 100 MEGA BTU per hour input. However, a new electric power plant constructed on lands under the jurisdiction of the Services may fall under the requirements of Section 201 of P.L. 100-42 which states: "...no new electric power plant may be constructed or operated as a base load power plant without the capability to use coal or another alternative fuel as a primary energy source."

Section 201 states that a power plant has this capability if it: "(1) has sufficient inherent design characteristics to permit the addition of equipment (including all necessary pollution devices) necessary to render such electric power plant capable of using coal or another alternate fuel as its primary energy source; and (2) is not physically, structurally, or technologically precluded from using coal or another alternate fuel as its primary energy source."

The statute further states that this capability "...shall not be interpreted to require any such powerplant to be immediately able to use coal or another alternate fuel... on its initial day of operation." The owner or operator of any new base load electric power plant which uses natural gas or petroleum as its primary energy source must also comply with the Department of Energy notification requirements of Section 201(d).

B. CONGRESSIONALLY DIRECTED COAL PROGRAM: The Fiscal Year (FY) 1987 Defense Appropriations Act, P.L. 99-500 (Section 9099), reiterated the continental United States (CONUS) coal use program directed by P.L. 99-190 (Section 8110). The FY 1988 Defense Appropriations Act repeated this direction. The goal of this Congressionally directed program is to increase annual Defense coal use by 1.6 million short tons by FY 1994 as compared with FY 1985 usage. P.L. 99-500 added a "sub-target" to the program to achieve an annual increase in the use of anthracite coal by 300,000 tons by 1994. It is Defense policy to actively search for opportunities to increase CONUS coal use to meet or exceed these goals within the constraints of: lowest LCC fuel selection criteria; National, State, and local environmental restrictions;

ENCLOSURE

private venture capital contracting viability; and continuing availability of the administrative funds made available by Section 8110, and made available for obligation until expended by Section 9099.

C. NON-CONVENTIONAL ENERGY SOURCES: The use of non-conventional energy sources (solar, geothermal, wind, tidal, biomass, refuse or refuse-derived fuel, waste oil and synthetic fuels) is strongly encouraged, wherever LCC effective and commercially viable.

Special care must be taken in the evaluation of possible refuse or refuse-derived fuel alternatives. There may be conflicting views on the environmental impact of such plants, leading in extreme cases to litigation. Defense personnel responsible for such projects must make sure that contracts clearly require that all applicable environmental laws and regulations are adhered to.

Contracts for energy from privately-financed refuse-fired facilities must contain terms and conditions which assure that the contractor carries out all his environmental responsibilities. As a minimum, these contracts shall contain provisions that the design, and operation and maintenance program be reviewed and certified as acceptable by an independent, qualified Professional Engineer, prior to contract signature. An annual review of the quality of operation and maintenance of the plant shall be required to be conducted by an independent, qualified Professional Engineer and a report filed with the Defense contracting officer, with remedies for unacceptable performance specified in the contract. In addition, provision should be made to periodically sample the waste streams into (particularly that of the Defense installation) and out of the plant to permit evaluation of compliance with environmental regulations.

II. ECONOMIC ANALYSIS: Energy related economic analysis procedures are prescribed by the National Energy Conservation Policy Act, 92 Stat., 3275, implemented by the National Bureau of Standards (NBS) Handbook 135, "Life-Cycle Cost Manual." In order to determine the lowest LCC energy alternative, an economic analysis from the perspective of cost to the Federal government (in accordance with Senate Committee on Armed Services Report 99-331 which accompanied the National Defense Authorization Act of FY 1987) shall be performed.

The economic analysis of both in-house and privately-funded alternatives must be prepared using the following criteria in addition to the procedures contained in NBS Handbook 135:

- The economic analysis of all the alternatives considered, including maintenance of the status quo, if it is an alternative, must be included as part of the decision backup.

- The Office of Management and Budget (OMB) Circular A-94 must be used to determine the LCC of each conventional energy alternative proposed (see Section C. below for specific rules applying to renewable energy alternatives).

- All economic assumptions used to perform the evaluations must be included with the respective alternative.

- Sensitivity analyses, comparing the effects of changes in initial investment, operating costs, etc., must be included to enable reviewing officials to fully evaluate how changes in assumptions affect the project's viability.

- If no private-sector or coal-fired power plant proposals were considered, an explanation must be attached stating specifically why these alternatives were not included in the evaluation. Requests for Military Construction Authorization will not be considered by the Congressional Committees without this justification.

- After determining the lowest LCC in-house and privately-funded alternatives, an internal rate of return (IRR) analysis should be prepared to compare the two alternatives. This analysis tool is used to provide decision makers with a "business-like" evaluation tool to assist in prioritization of projects competing for scarce resources. (See attachment for an IRR example case.)

A. IN-HOUSE CONSTRUCTION ALTERNATIVES: The actual current energy costs paid by the Government for deliveries to the installation will be used as the starting point of all economic analyses. The stock fund rate charged by the Defense Fuel Supply Center (DFSC) to facilities purchasing petroleum products under a DFSC contract shall not be used.

Additionally, the latest official regional average, industrial sector, energy cost escalation rates provided by the Energy Information Administration will be used for projecting future energy costs and developing appropriate present worth values, as required by OMB Circular A-94. The most current escalation rates to be used by the Services, effective January 1988, have been distributed.

B. PRIVATELY-FUNDED CONTRACTS: Title 10 U.S.C., Section 2394 permits Military Departments to enter into long-term (up to 30 years) contracts with a private sector entity. The contract will allow the contractor to build, own, and operate a plant to furnish either energy or fuel to a military installation. The House of Representatives, in its Conference Report on the 1984 Military Construction Authorization Act, stated that the Services are to aggressively pursue private-sector financing before any future large scale heating or power plants are authorized for military construction funding.

In order to determine the LCC of a private-sector proposal, only those costs and benefits that are directly associated with the proposal should be used in the economic analysis. Although there may be other benefits to the Government as a whole that may reasonably be assumed to result from the proposed project (i.e., income taxes), these macroeconomic effects are extremely difficult to quantify with any degree of accuracy. The use of the OMB Circular A-94 discount rate is intended to partially compensate for the unaccounted benefits resulting from this type of proposal.

C. RENEWABLE ENERGY ALTERNATIVES: Title 10 U.S.C., Section 2857 requires that renewable energy alternatives shall be selected for construction of military facilities if the additional cost of the renewable energy system can be recovered over the expected life of the facility. The statute further specifies that the economic comparison shall: (1) include all operation and maintenance expenses expected over the life of the facility or 15 years, whichever is shorter; (2) use a discount rate of 7 percent per year; (3) use fossil fuel and/or other alternative fuel costs (and a rate of cost growth for fossil fuel costs) determined by the Secretary of Defense (These shall be the actual costs at the installation and the latest official regional average, industrial sector energy cost escalation rates provided by the Energy Information Administration.); and (4) reduce the renewable energy system investment cost by 10 percent "to reflect an allowance for an investment cost credit."

III. OTHER CONSIDERATIONS:

A. POLLUTION ABATEMENT: Existing energy applications and new projects shall comply with Federal, state, and local host nation pollution abatement regulations, to the full extent required by applicable laws and regulations.

B. PRIVATE SECTOR CREATIVITY: In soliciting for private-sector projects in support of this policy, every effort should be made to maintain flexibility in the project specification to take maximum benefit of the creativity, technical expertise, and inventiveness of the private sector.

C. ENERGY STORAGE: In order to prevent mission support disruption from fuel supply problems, Defense liquid-fueled thermal plants will be designed to store no less than 30 days of the maximum continuous expected demand. All coal-fired plants shall be provided with a minimum fuel storage of 90 days such supply. The cost of maintaining these inventories must be considered as an "investment" when preparing the economic analysis for these projects and all private-sector proposals must include this provision, also. The intent of this requirement is to ensure secure, continuous mission support capability, and collocated or nearby fuel storage facilities may satisfy this requirement and should be carefully considered.

D. FUEL SUBSTITUTION: Fuel shortages have in the past demonstrated the advantage of fuel substitution capability. Numerous tests and extensive operating experiences have demonstrated that successful substitute fuels are available for diesel fuel, heating oil, and gasoline. It is important that each installation determine those alternative fuels which can be acceptably fired in existing equipment and what modifications are needed to implement the substitution. Installation contingency plans should include a fuel conversion annex detailing the mechanical system alterations and changes in operations and maintenance required to use alternative fuels.

ATTACHMENT

EXAMPLE
INTERNAL RATE OF RETURN CALCULATION

After the lowest life-cycle cost (LCC) in-house and private-sector alternatives have been determined, all the information necessary to calculate the internal rate of return (IRR), from the Government's perspective, is available. Utilizing the undiscounted cash flows that were used to calculate the LCC for each project, the IRR can be determined as follows:

	Investment	Cash Flow 1/ Years 1-10	NPV 2/ @10%	IRR
Private-Sector	$ 0	$500,000	$3,072,284	
Less: In-House	$1,000,000	$200,000	$2,228,913	
Difference	($1,000,000)	$300,000		27.32%

As noted in this simple example, the use of an IRR will not change the determination of which project has the lowest LCC. It is merely another tool to help evaluate the return the Government can reasonably expect from "investing" its own money in a project instead of allowing the private-sector to finance the operation. In the above example, the Government is achieving a 27.32% return on the taxpayers' money by undertaking this project with federal capital. Conversely, an in-house project, such as below, that has an IRR of less than 10%, (the Government's "lost opportunity of capital" per OMB Circular A-94) should be awarded to the private-sector.

	Investment	Cash Flow Years 1-10	NPV 1/ @10%	IRR
Private-sector	$ 0	$325,000	$1,996,984	
Less: In House	$1,000,000	$200,000	$2,228,913	
Difference	($1,000,000)	$125,000		4.27%

The use of an IRR can also be used to prioritize competing projects in a manner that may be more meaningful to a reviewer and decision-maker than simple comparison of LCC dollars.

The actual IRR calculation can be performed on many hand-held calculators or with personal computer programs by using the cash flow data shown on the "Difference" line above.

NOTE:

1/ Undiscounted.
2/ This column represents the net present value of the cash flows noted using a 10% discount rate.

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